

Technical Memorandum

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DATE: March 30, 2012

SUBJECT: Summary of Distillation Feed Composition Analysis

I. Purpose

The objective of this document is to provide a summary of the Distillation Feed Composition Analysis received by the EPA from Component 3 of the 2011 Information Collection Request (ICR) of the Petroleum Refining industry.

II. Background

On April 1, 2011, the EPA sent an ICR to facilities in the U.S. petroleum refining industry. The ICR was comprehensive and designed to collect information on processing characteristics, crude slate characteristics, emissions inventories, and source testing to bolster our current data and fill known data gaps. The ICR had four components: (1) a questionnaire on processes and controls to be completed by all petroleum refineries (Component 1); (2) an emissions inventory to be developed by all petroleum refineries using the emissions estimation protocol developed for this effort (Component 2); (3) distillation feed sampling and analysis to be conducted by all petroleum refineries (Component 3); and (4) emissions source testing to be completed in accordance with an EPA-approved protocol for specific sources at specific petroleum refineries (Component 4).

Component 3 of the ICR required petroleum refineries to submit triplicate samples of the feed to the distillation column (or first major processing unit in rare instances where a distillation column did not exist) that were analyzed for target analytes of mercury, chlorine, sulfur, antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, manganese, nickel, and selenium, as well for specific units of measure including higher heating value, density, and API gravity. The refiners were given the option to sample before or after the desalter and if multiple

distillation columns were processing different feed streams, triplicate samples of these streams were also requested. This memorandum summarizes the results of the non-Confidential Business Information (non-CBI) submittals as well as provides select aggregated CBI and non-CBI data from the feed samples submitted. A summary of the non-CBI information and select aggregated data can be found in a Microsoft® Excel spreadsheet in the docket (EPA Docket No. EPA-HQ-OAR-2010-0682). Some facilities often claimed specific distillation feed data as CBI, and included that information in a CBI version of the distillation feed analysis template stored in the EPA's CBI office in Research Triangle Park, NC.

In total, the EPA received 130 facility submittals for component 3. Of the 130, only 30 were claimed to be CBI and these values are only included in the Microsoft® Excel spreadsheet as part of an aggregate dataset that cannot be traced back to any individual refiner. For a further discussion on how the CBI data were aggregated and presented so as to not break the Agency's CBI procedures and protocols, see Section V below.

III. Microsoft® Excel Spreadsheet Set-up

The Microsoft® Excel spreadsheet consists of 5 tabs including: (1) Non-CBI Raw Data, (2) Non-CBI Facility Avgs (No Sort), (3) Facility Info, (4) Non-CBI Facility Avgs (Sort), and (5) Aggregate CBI and Non-CBI Data [Note: Tabs 3-5 are colored red and are the most useful with regard to data analysis in the spreadsheet].

Tab (1) is a compilation of the non-CBI raw data that were submitted to the EPA on the OMB approved form used for Component 3 (OMB Control No. 2060-0657). The data were slightly modified from the submittals in certain instances to remove indicators of values below detection levels and such indicators are noted in the column to the immediate left of the value with a "<" expression. Also, there were some facilities who simply reported below detection level and no number, and this text was removed so that the values presented are only numbers. Lastly, some, but not all, of the data has been quality checked and where changes were made, an accompanying comment bubble was included with an explanation in this tab. The EPA has made a significant effort to quality check the data, however the data presented here should not be considered to be final at this time, but rather more representative of what industry has submitted to the Agency.

Tab (2) is where the calculations for each facility are done. The facility by facility values presented here are the averages of each analyte and specific unit of measure in the distillation feed as well as other determinations for things like detection levels and whether or not the sample was taken before or after a desalter. With respect to the detection limits, the EPA applied the following conventions:

- DLL = Detection Level Limited = A combination of the facility's samples are both above and below detection limit
- BDL = Below Detection Limit = All of the facility's samples are below detection limit
- ADL = All of the facility's samples are above detection limit

Additionally, if all samples for a given analyte at a given refinery were BDL, the EPA assigned a value of one-half of the average BDL threshold for that analyte at that facility. Otherwise, the averages presented were calculated as the average of the actually detected quantities and, if applicable, the BDL threshold values. This was done so as to not bias high those values which were determined solely based on the results that were BDL. Lastly, due to the fact that certain built-in Microsoft® Excel functions were used to more easily compute facility averages, this table should not be used to sort and filter the results in any way, as errors will occur.

Tab (3) provides a reference table to identify the specific facilities that submitted data as part of this ICR effort. This tab includes individual facilities ICR IDs, as well as the plant's name and physical address.

Tab (4) is a cleaned-up version of Tab (2) and can be sorted and filtered accordingly. This is talked about in more detail in Section IV below.

Tab (5) is an aggregated data set consisting of both non-CBI and CBI information. These averages and counts are discussed in further detail in Section V below.

IV. Non-CBI Distillation Feed Analysis Facility Averages (Tab 4)

The information presented in Tab (4) includes the calculated results of the non-CBI facility by facility averages submitted to the EPA. These averages were generated in Tab (2) from the raw dataset in Tab (1), however, due to the use of certain Microsoft® Excel functions, Tab (2) cannot be sorted and filtered properly, and thus this tab was generated to more easily utilize this function. The sort and filter function will allow you to view the various averages

generated on a facility by facility basis; and all of the components can be sorted from high to low, low to high, by type of detection limit where appropriate, or even by sample location (before or after the desalter). It should be noted that some facilities did not report certain values or simply reported 'BDL' with no numeric limit given and thus, the output in Microsoft® Excel for these values is an error in the form of '#DIV/0!'. It should also be noted that while the EPA made an effort to follow-up with facilities who may have reported data incorrectly (e.g. reported in wrong units of ppb or weight percent rather than in ppm), the data presented here should not be considered to be final and we are still performing additional quality assurance checks at this time. The data that have been changed from the initial submittal have comment bubbles in Tab (1) with a stated reason for why changes were made. Tables IV-1A and IV-1B below (which contain the same information as the table in the spreadsheet in Tab (4) and have been divided as such strictly because of the large size) show the results of the non-CBI facility averages.

Table IV-1A: Non-CBI Distillation Feed Analysis Facility Averages

ICR_ID	Indicate if the sample was collected before or after the desalter	Avg Higher Heating Value (Btu/lb)	Avg Density (lb/ft3)	Avg API Gravity	DL for Mercury	Avg Mercury, ppmw	DL for Chlorine	Avg Chlorine, ppmw	DL for Sulfur	Avg Sulfur, ppmw	DL for Antimony	Avg Antimony, ppmw	DL for Arsenic	Avg Arsenic, ppmw
AK5A0050	N/A	18,855	56.84	23.80	BDL	0.020	BDL	198	ADL	63,130	BDL	0.490	BDL	1.23
AK5A0090	After	19,715	52.03	38.47	BDL	0.050	ADL	1.00	ADL	10,067	BDL	0.500	BDL	0.500
AL3C0030	After	18,167	51.24	40.88	BDL	0.007	BDL	8.17	ADL	1,553	BDL	0.642	BDL	0.421
AL3D0010	After	19,000	49.76	45.93	BDL	0.007	ADL	25.3	ADL	3,067	BDL	0.718	BDL	0.492
AL3D0020	After	18,578	57.62	21.78	BDL	0.008	DLL	78.1	ADL	345	DLL	1.05	BDL	0.470
AR3D0100	Before	19,233	56.91	23.85	BDL	0.004	DLL	37.2	ADL	7,043	DLL	0.285	DLL	0.127
AR3D0110	Before	18,250	49.40	48.54	DLL	0.005	DLL	27.2	DLL	8,740	ADL	0.173	DLL	0.117
CA5A0120	Before	19,194	54.44	30.76	BDL	0.050	ADL	1.00	ADL	16,567	BDL	0.500	BDL	0.500
CA5A0190	Before	17,779	59.97	15.83	BDL	0.045	ADL	64.5	ADL	13,478	BDL	11.8	BDL	2.34
CA5A0200	N/A	20,922	61.03	13.00	BDL	#DIV/0!	ADL	340	ADL	54,667	BDL	#DIV/0!	BDL	#DIV/0!
CA5A0210	Before	16,829	58.69	18.93	BDL	#DIV/0!	DLL	76.0	ADL	34,000	BDL	#DIV/0!	BDL	#DIV/0!
CA5A0220	N/A	19,137	54.47	30.70	BDL	#DIV/0!	DLL	54.7	ADL	5,300	BDL	#DIV/0!	BDL	#DIV/0!
CA5A0230	Before	18,343	56.94	23.56	BDL	0.005	DLL	69.0	DLL	13,360	BDL	0.050	DLL	0.127
CA5A0310	Before	16,629	56.80	23.97	BDL	#DIV/0!	DLL	55.0	ADL	14,333	BDL	#DIV/0!	BDL	#DIV/0!
CA5A0330	N/A	16,883	58.25	19.83	BDL	#DIV/0!	ADL	17.0	ADL	14,633	BDL	#DIV/0!	BDL	#DIV/0!
CO4A0340	Before	18,714	52.61	36.36	ADL	0.00	DLL	12.7	ADL	10,722	BDL	0.500	DLL	1.07
DE1A0360	Before	18,924	55.41	27.83	BDL	0.050	ADL	62.3	ADL	14,199	BDL	1.09	BDL	0.438
IL2A0400	Before	17,821	55.62	27.23	BDL	0.025	BDL	100	ADL	28,900	BDL	0.250	BDL	0.050
IL2A0410	After	18,300	57.02	23.33	ADL	0.007	DLL	340	ADL	18,000	ADL	0.257	DLL	0.083
IL2A0420	After	19,161	52.82	35.60	ADL	0.002	ADL	37.6	ADL	7,130	BDL	0.025	DLL	0.053
IN2A0440	After	19,421	54.03	32.04	BDL	0.050	ADL	1.00	ADL	15,511	BDL	0.500	BDL	0.500
IN2A0450	Before	18,790	53.10	34.08	DLL	0.002	ADL	2.60	ADL	2,864	DLL	0.005	ADL	0.064
KS2C0460	Before	18,829	53.13	34.67	BDL	#DIV/0!	BDL	#DIV/0!	ADL	11,314	BDL	#DIV/0!	BDL	#DIV/0!
KS2C0470	After	19,385	53.99	31.58	BDL	#DIV/0!	ADL	137	DLL	8,768	BDL	#DIV/0!	BDL	#DIV/0!

Table IV-1A: Non-CBI Distillation Feed Analysis Facility Averages

ICR_ID	Indicate if the sample was collected before or after the desalter	Avg Higher Heating Value (Btu/lb)	Avg Density (lb/ft3)	Avg API Gravity	DL for Mercury	Avg Mercury, ppmw	DL for Chlorine	Avg Chlorine, ppmw	DL for Sulfur	Avg Sulfur, ppmw	DL for Antimony	Avg Antimony, ppmw	DL for Arsenic	Avg Arsenic, ppmw
KS2C0480	After	18,919	54.79	29.63	BDL	#DIV/0!	DLL	22.0	ADL	16,747	BDL	#DIV/0!	BDL	#DIV/0!
KY2A0490	After	19,125	53.25	34.30	DLL	0.003	ADL	8.03	ADL	11,333	BDL	0.025	DLL	0.102
LA3C0520	Before	17,899	50.96	40.40	BDL	#DIV/0!	ADL	263	ADL	1,600	BDL	#DIV/0!	BDL	#DIV/0!
LA3C0560	After	17,439	54.75	30.00	BDL	#DIV/0!	ADL	261	ADL	11,469	BDL	#DIV/0!	BDL	#DIV/0!
LA3C0590	After	17,220	54.87	29.38	BDL	0.050	ADL	94.8	ADL	20,083	BDL	0.500	BDL	0.500
LA3C0600	After	16,778	57.22	22.92	BDL	0.050	ADL	105	ADL	18,467	BDL	0.500	BDL	0.500
LA3C0610	After	18,887	54.73	29.83	BDL	0.001	DLL	8.92	ADL	19,850	BDL	0.025	BDL	0.025
LA3C0620	After	18,910	54.85	29.34	BDL	0.008	DLL	24.3	ADL	24,882	BDL	0.472	BDL	0.469
LA3C0630	After	19,256	53.85	32.40	BDL	0.117	ADL	45.5	ADL	3,746	BDL	1.04	BDL	0.417
LA3C0640	After	18,971	53.99	31.87	BDL	0.050	ADL	3,475	ADL	9,875	BDL	0.530	BDL	0.267
LA3C0670	After	18,918	53.63	32.88	BDL	0.050	BDL	2.50	ADL	0.986	BDL	0.597	BDL	0.298
LA3C0700	Before	17,628	52.45	36.77	BDL	0.050	ADL	242	DLL	2,167	BDL	1.50	BDL	1.50
LA3D0530	Before	19,567	51.15	50.83	ADL	0.068	BDL	2.00	DLL	11.1	DLL	0.166	BDL	0.018
LA3D0540	Before	17,271	57.66	21.60	BDL	0.050	ADL	86.9	ADL	23.3	BDL	1.00	BDL	1.00
LA3D0660	Before	18,699	52.10	37.93	DLL	0.009	ADL	24.1	ADL	6,757	BDL	0.050	DLL	0.117
MI2A0710	After	18,685	53.43	33.77	BDL	0.001	ADL	20.8	ADL	14,160	BDL	0.025	DLL	0.053
MN2B0720	After	19,576	56.36	25.37	BDL	0.050	ADL	1.00	ADL	33,500	BDL	0.500	BDL	0.500
MN2B0730	After	18,927	54.52	30.82	BDL	0.019	DLL	37.0	ADL	12,561	BDL	0.491	BDL	1.23
MS3D0750	N/A	19,200	57.18	21.30	BDL	0.003	BDL	8.00	ADL	6,240	DLL	0.100	DLL	0.151
MS3D0760	After	18,487	59.08	17.89	BDL	0.008	DLL	84.3	ADL	416	BDL	0.467	BDL	0.467
MT4A0770	Before	19,417	56.92	23.52	BDL	0.020	DLL	18.7	ADL	24,665	BDL	#DIV/0!	BDL	#DIV/0!
MT4A0790	N/A	18,172	56.12	25.83	BDL	0.500	BDL	100	ADL	27,956	BDL	2.50	BDL	2.50
MT4A0800	After	18,185	56.31	25.30	BDL	#DIV/0!	BDL	#DIV/0!	ADL	26,667	BDL	#DIV/0!	BDL	#DIV/0!
NJ1A0820	N/A	19,133	56.42	25.07	BDL	0.016	DLL	49.7	BDL	1,567	BDL	1.02	BDL	1.02

Table IV-1A: Non-CBI Distillation Feed Analysis Facility Averages

ICR_ID	Indicate if the sample was collected before or after the desalter	Avg Higher Heating Value (Btu/lb)	Avg Density (lb/ft3)	Avg API Gravity	DL for Mercury	Avg Mercury, ppmw	DL for Chlorine	Avg Chlorine, ppmw	DL for Sulfur	Avg Sulfur, ppmw	DL for Antimony	Avg Antimony, ppmw	DL for Arsenic	Avg Arsenic, ppmw
NJ1A0860	After	18,986	54.27	31.07	BDL	0.050	ADL	77.7	ADL	20,294	BDL	1.15	BDL	0.458
NM3E0880	After	19,547	50.59	43.03	ADL	0.039	DLL	24.3	ADL	1,136	ADL	0.975	ADL	2.44
NM3E0890	After	19,201	53.30	34.07	BDL	0.018	ADL	121	ADL	13,405	BDL	0.500	BDL	0.500
NM3E0891	After	19,338	52.83	35.53	BDL	0.017	ADL	150	ADL	10,693	BDL	0.500	BDL	0.500
NV5A0810	N/A	18,737	7.59	24.03	DLL	0.041	BDL	250	ADL	15,922	BDL	0.864	BDL	0.540
OH2A0910	Before	19,195	54.47	30.68	BDL	0.050	ADL	1.00	ADL	20,883	BDL	0.500	BDL	0.500
OH2A0920	After	19,025	52.97	35.23	ADL	0.005	DLL	6.43	ADL	11,697	BDL	0.025	BDL	0.025
OH2A0930	After	18,401	51.98	37.87	DLL	0.002	DLL	1.97	ADL	5,178	BDL	0.001	ADL	0.007
OH2A0940	After	19,452	52.21	37.58	BDL	0.050	ADL	55.0	ADL	3,275	BDL	0.625	BDL	0.250
OK2C0960	Before	19,400	52.02	38.33	BDL	#DIV/0!	ADL	262	ADL	6,838	BDL	#DIV/0!	BDL	#DIV/0!
OK2C0970	After	19,584	52.46	36.78	BDL	0.013	ADL	149	ADL	8,157	BDL	0.500	BDL	0.500
OK2C0980	After	19,753	52.43	36.80	BDL	0.013	ADL	309	ADL	3,860	BDL	0.500	BDL	0.500
OK2C0990	Before	19,501	52.75	35.79	BDL	#DIV/0!	ADL	2.01	ADL	13,220	BDL	#DIV/0!	BDL	#DIV/0!
PA1A1020	Before	19,363	52.53	36.33	BDL	0.050	ADL	52.5	ADL	1,621	BDL	1.25	BDL	0.500
PA1A1030	After	19,317	53.93	32.32	BDL	0.050	ADL	37.1	ADL	1,625	BDL	1.25	BDL	0.500
PA1B1010	Before	19,221	66.67	1.00	BDL	0.010	ADL	485	ADL	377	DLL	1.93	ADL	2.70
PA1B1050	After	13,123	55.37	28.03	BDL	0.018	ADL	90.1	ADL	21,933	BDL	0.500	BDL	2.50
TN2A1060	Before	19,389	51.66	39.36	BDL	#DIV/0!	ADL	179	ADL	3,587	BDL	#DIV/0!	BDL	#DIV/0!
TX3A1080	After	18,945	53.92	32.47	ADL	0.003	BDL	5.00	ADL	1,663	BDL	0.500	BDL	0.417
TX3A1120	After	19,209	51.72	39.18	BDL	0.019	DLL	23.0	ADL	5,039	BDL	0.489	BDL	1.22
TX3A1190	After	19,100	51.42	40.12	DLL	0.032	ADL	54.2	ADL	4,677	DLL	0.102	BDL	0.066
TX3A1290	Before	19,457	54.73	30.05	BDL	#DIV/0!	ADL	188	ADL	3,972	DLL	0.266	BDL	#DIV/0!
TX3A1300	Before	19,743	50.63	42.25	BDL	#DIV/0!	ADL	222	ADL	2,480	BDL	#DIV/0!	BDL	#DIV/0!
TX3B1110	Before	19,455	54.48	30.68	BDL	0.050	ADL	1.00	ADL	12,580	BDL	0.500	BDL	0.500

Table IV-1A: Non-CBI Distillation Feed Analysis Facility Averages

ICR_ID	Indicate if the sample was collected before or after the desalter	Avg Higher Heating Value (Btu/lb)	Avg Density (lb/ft3)	Avg API Gravity	DL for Mercury	Avg Mercury, ppmw	DL for Chlorine	Avg Chlorine, ppmw	DL for Sulfur	Avg Sulfur, ppmw	DL for Antimony	Avg Antimony, ppmw	DL for Arsenic	Avg Arsenic, ppmw
TX3B1130	Before	18,738	57.37	22.49	BDL	0.015	DLL	586	ADL	20,883	BDL	2.75	BDL	2.75
TX3B1150	After	22,333	52.57	34.20	ADL	0.100	ADL	0.250	ADL	0.273	ADL	15.8	ADL	2.50
TX3B1160	Before	18,743	55.75	26.93	BDL	0.019	ADL	39.9	ADL	20,194	BDL	0.489	BDL	1.22
TX3B1170	Before	18,491	53.38	34.06	BDL	0.020	ADL	15.5	ADL	14,980	BDL	0.025	BDL	0.025
TX3B1180	After	19,795	53.34	34.20	BDL	0.050	ADL	1.00	ADL	1.09	BDL	0.500	BDL	0.500
TX3B1181	After	19,701	50.86	41.57	BDL	0.050	ADL	1.00	ADL	0.193	BDL	0.500	BDL	0.500
TX3B1200	After	18,654	58.03	20.69	BDL	0.050	ADL	80.6	ADL	16,893	BDL	0.833	BDL	0.500
TX3B1210	After	19,368	50.76	42.43	ADL	0.020	DLL	6.00	ADL	1,593	BDL	0.025	BDL	0.025
TX3B1220	Before	19,286	53.64	33.05	BDL	0.008	ADL	161	ADL	20,442	BDL	0.483	BDL	0.483
TX3B1250	Before	18,267	57.99	20.18	BDL	#DIV/0!	ADL	33.0	ADL	34,330	DLL	0.005	DLL	0.007
TX3B1310	N/A	19,741	51.42	40.25	BDL	#DIV/0!	ADL	169	ADL	5,737	BDL	#DIV/0!	BDL	#DIV/0!
TX3B1320	After	19,594	52.47	36.72	BDL	#DIV/0!	ADL	121	ADL	6,663	BDL	#DIV/0!	BDL	#DIV/0!
TX3B1330	Before	18,814	56.37	25.18	BDL	0.008	ADL	86.5	ADL	23,823	BDL	0.411	BDL	0.411
UT4A1360	N/A	19,988	51.50	39.53	BDL	0.020	BDL	250	BDL	250	BDL	0.983	BDL	0.615
UT4A1370	Before	19,678	51.63	39.47	BDL	#DIV/0!	ADL	155	ADL	456	BDL	#DIV/0!	BDL	#DIV/0!
UT4A1380	After	19,683	50.54	43.13	ADL	0.027	ADL	2.21	ADL	3,110	ADL	1.00	ADL	1.00
VI6A1530	Before	19,017	54.76	29.93	BDL	#DIV/0!	BDL	#DIV/0!	ADL	8,500	BDL	#DIV/0!	BDL	#DIV/0!
WA5A1400	After	19,685	54.69	30.00	BDL	0.050	ADL	1.00	ADL	10,833	BDL	0.500	BDL	0.500
WA5A1410	Before	19,090	54.15	31.47	BDL	0.008	DLL	79.3	ADL	11,080	BDL	0.413	BDL	0.413
WA5A1440	After	19,000	54.53	30.50	DLL	0.019	DLL	110	ADL	8,000	BDL	1.40	BDL	1.40
WI2B1460	After	18,700	55.24	28.67	BDL	0.020	DLL	566	ADL	14,767	BDL	0.478	BDL	0.240
WV1B1450	After	19,806	50.67	42.60	BDL	0.050	ADL	87.8	ADL	676	BDL	1.25	BDL	0.500
WY4A1470	Before	18,276	55.06	29.07	DLL	0.003	DLL	2.93	ADL	23,040	ADL	0.004	ADL	0.009
WY4A1480	After	18,594	52.18	37.87	BDL	#DIV/0!	BDL	#DIV/0!	ADL	1,900	BDL	#DIV/0!	DLL	0.325

Table IV-1A: Non-CBI Distillation Feed Analysis Facility Averages

ICR_ID	Indicate if the sample was collected before or after the desalter	Avg Higher Heating Value (Btu/lb)	Avg Density (lb/ft3)	Avg API Gravity	DL for Mercury	Avg Mercury, ppmw	DL for Chlorine	Avg Chlorine, ppmw	DL for Sulfur	Avg Sulfur, ppmw	DL for Antimony	Avg Antimony, ppmw	DL for Arsenic	Avg Arsenic, ppmw
WY4A1490	N/A	18,949	51.40	40.23	BDL	#DIV/0!	DLL	13.0	ADL	700	BDL	#DIV/0!	BDL	#DIV/0!
WY4A1500	N/A	19,750	47.37	54.60	BDL	0.032	DLL	311	DLL	1,414	BDL	0.804	BDL	0.493
WY4A1510	Before	18,565	53.75	32.97	BDL	0.350	DLL	166	ADL	12,724	BDL	1.94	BDL	1.78
WY4A1520	After	19,321	51.49	39.97	BDL	0.050	ADL	50.9	ADL	1,806	BDL	0.833	BDL	0.333

Table IV-1B: Non-CBI Distillation Feed Analysis Facility Averages Continued

ICR_ID	DL for Beryllium	Avg Beryllium, ppmw	DL for Cadmium	Avg Cadmium, ppmw	DL for Chromium	Avg Chromium, ppmw	DL for Cobalt	Avg Cobalt, ppmw	DL for Lead	Avg Lead, ppmw	DL for Manganese	Avg Manganese, ppmw	DL for Nickel	Avg Nickel, ppmw	DL for Selenium	Avg Selenium, ppmw
AK5A0050	BDL	0.490	BDL	0.490	BDL	1.97	BDL	1.97	BDL	0.490	BDL	1.97	ADL	19.5	BDL	0.490
AK5A0090	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500
AL3C0030	BDL	0.128	BDL	0.160	BDL	0.320	BDL	0.320	DLL	0.420	BDL	0.320	BDL	1.28	BDL	0.421
AL3D0010	BDL	0.143	BDL	0.180	BDL	0.360	BDL	0.360	DLL	0.663	BDL	0.360	BDL	1.43	BDL	0.492
AL3D0020	BDL	0.276	BDL	0.276	BDL	0.470	BDL	2.35	BDL	0.470	BDL	0.708	DLL	7.63	BDL	0.470
AR3D0100	BDL	0.025	BDL	0.025	ADL	0.343	ADL	0.324	ADL	0.101	ADL	0.266	ADL	2.87	BDL	0.124
AR3D0110	BDL	0.025	DLL	0.030	ADL	0.219	DLL	0.104	ADL	0.100	ADL	0.071	ADL	4.57	DLL	0.183
CA5A0120	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500
CA5A0190	BDL	2.34	BDL	1.18	BDL	1.18	BDL	1.18	BDL	2.34	BDL	2.34	ADL	57.4	BDL	4.69

Table IV-1B: Non-CBI Distillation Feed Analysis Facility Averages Continued

ICR_ID	DL for Beryllium	Avg Beryllium, ppmw	DL for Cadmium	Avg Cadmium, ppmw	DL for Chromium	Avg Chromium, ppmw	DL for Cobalt	Avg Cobalt, ppmw	DL for Lead	Avg Lead, ppmw	DL for Manganese	Avg Manganese, ppmw	DL for Nickel	Avg Nickel, ppmw	DL for Selenium	Avg Selenium, ppmw
CA5A0200	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	ADL	68.7	BDL	#DIV/0!
CA5A0210	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	ADL	48.7	BDL	#DIV/0!
CA5A0220	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	ADL	28.0	BDL	#DIV/0!
CA5A0230	BDL	0.050	BDL	0.050	DLL	0.200	DLL	1.40	DLL	0.540	DLL	0.180	DLL	59.4	BDL	0.050
CA5A0310	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	ADL	13.6	BDL	#DIV/0!
CA5A0330	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	ADL	3.00	BDL	#DIV/0!	DLL	3.20	ADL	62.2	BDL	#DIV/0!
CO4A0340	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	DLL	6.36	BDL	0.500
DE1A0360	BDL	0.438	BDL	0.438	BDL	0.438	BDL	0.438	BDL	0.438	BDL	0.438	ADL	3.44	BDL	0.438
IL2A0400	BDL	0.100	BDL	0.100	BDL	0.250	BDL	0.250	BDL	0.150	DLL	2.29	DLL	5.03	BDL	0.250
IL2A0410	BDL	0.0001	DLL	0.004	ADL	0.069	ADL	0.047	ADL	0.050	ADL	0.096	ADL	9.80	ADL	0.380
IL2A0420	BDL	0.025	BDL	0.025	BDL	0.025	DLL	0.067	DLL	0.067	BDL	0.025	ADL	8.85	ADL	0.120
IN2A0440	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500
IN2A0450	BDL	0.001	BDL	0.001	ADL	0.040	DLL	0.007	DLL	0.059	ADL	0.061	ADL	0.757	ADL	0.035
KS2C0460	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	DLL	8.40	BDL	#DIV/0!
KS2C0470	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	DLL	5.30	BDL	#DIV/0!
KS2C0480	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	ADL	17.3	DLL	0.692
KY2A0490	BDL	0.025	BDL	0.025	BDL	0.025	DLL	0.072	DLL	0.135	BDL	0.025	ADL	7.37	DLL	0.082
LA3C0520	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!
LA3C0560	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	DLL	5.14	BDL	#DIV/0!
LA3C0590	BDL	0.250	BDL	0.250	BDL	0.250	BDL	0.250	BDL	0.500	BDL	0.250	DLL	1.68	BDL	0.500
LA3C0600	BDL	0.250	BDL	0.250	BDL	0.250	BDL	0.250	BDL	0.333	BDL	0.250	DLL	3.98	BDL	0.500
LA3C0610	BDL	0.025	BDL	0.025	DLL	0.055	ADL	0.190	BDL	0.025	DLL	0.237	ADL	16.9	ADL	0.112
LA3C0620	BDL	0.235	BDL	0.235	BDL	0.468	BDL	2.35	BDL	0.468	BDL	0.717	DLL	4.45	BDL	0.468
LA3C0630	BDL	0.417	BDL	0.417	BDL	0.417	BDL	0.417	BDL	0.417	BDL	0.417	ADL	1.99	BDL	0.417

Table IV-1B: Non-CBI Distillation Feed Analysis Facility Averages Continued

ICR_ID	DL for Beryllium	Avg Beryllium, ppmw	DL for Cadmium	Avg Cadmium, ppmw	DL for Chromium	Avg Chromium, ppmw	DL for Cobalt	Avg Cobalt, ppmw	DL for Lead	Avg Lead, ppmw	DL for Manganese	Avg Manganese, ppmw	DL for Nickel	Avg Nickel, ppmw	DL for Selenium	Avg Selenium, ppmw
LA3C0640	BDL	0.025	BDL	0.133	BDL	0.267	BDL	0.267	BDL	0.267	BDL	0.267	ADL	5.22	BDL	0.530
LA3C0670	BDL	0.030	BDL	0.148	BDL	0.298	BDL	0.298	BDL	0.298	BDL	0.298	ADL	4.00	BDL	0.597
LA3C0700	BDL	0.750	BDL	0.750	BDL	0.750	BDL	0.750	BDL	0.750	BDL	0.750	DLL	2.03	BDL	1.17
LA3D0530	BDL	0.018	DLL	0.042	ADL	0.150	BDL	0.018	ADL	0.465	DLL	0.176	ADL	0.460	BDL	0.092
LA3D0540	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	1.00
LA3D0660	BDL	0.050	BDL	0.050	DLL	0.133	DLL	0.100	DLL	0.417	ADL	0.200	ADL	2.75	BDL	0.050
MI2A0710	BDL	0.025	BDL	0.025	DLL	0.087	DLL	0.067	DLL	0.050	BDL	0.025	ADL	20.5	ADL	0.143
MN2B0720	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	DLL	1.66	BDL	0.500	BDL	0.500	BDL	0.500
MN2B0730	BDL	0.491	BDL	0.491	DLL	3.61	BDL	1.96	BDL	0.491	BDL	1.96	DLL	15.0	DLL	0.914
MS3D0750	BDL	0.025	BDL	0.025	ADL	0.250	ADL	0.146	DLL	0.075	ADL	0.248	ADL	4.13	BDL	0.105
MS3D0760	BDL	0.233	BDL	0.233	DLL	1.02	BDL	2.33	BDL	0.467	BDL	0.700	DLL	5.93	BDL	0.467
MT4A0770	BDL	#DIV/0!	BDL	#DIV/0!	DLL	2.26	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	ADL	27.4	DLL	0.616
MT4A0790	BDL	2.50	BDL	0.500	BDL	2.50	BDL	2.50	BDL	2.50	BDL	2.50	ADL	8.11	BDL	2.50
MT4A0800	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	ADL	7.67	BDL	#DIV/0!
NJ1A0820	BDL	0.102	BDL	0.255	BDL	0.495	BDL	2.55	BDL	1.02	BDL	0.750	BDL	2.02	BDL	1.02
NJ1A0860	BDL	0.458	BDL	0.458	BDL	0.458	BDL	0.458	BDL	0.458	BDL	0.458	ADL	5.52	DLL	0.945
NM3E0880	ADL	0.975	ADL	0.975	ADL	3.90	ADL	3.90	ADL	0.975	ADL	3.90	ADL	0.986	ADL	0.975
NM3E0890	BDL	0.100	BDL	0.100	BDL	0.250	BDL	0.500	BDL	0.500	BDL	0.250	ADL	4.62	BDL	0.500
NM3E0891	BDL	0.100	BDL	0.100	BDL	0.250	BDL	0.500	BDL	0.500	BDL	0.250	ADL	1.93	BDL	0.500
NV5A0810	BDL	0.432	BDL	0.184	BDL	2.16	BDL	0.292	BDL	7.73	BDL	0.864	ADL	13.3	BDL	1.84
OH2A0910	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	DLL	1.04	BDL	0.500
OH2A0920	BDL	0.025	BDL	0.025	DLL	0.057	DLL	0.090	DLL	0.190	DLL	0.050	ADL	14.1	ADL	0.127
OH2A0930	BDL	0.001	DLL	0.003	ADL	0.057	ADL	0.032	ADL	0.009	ADL	0.008	ADL	1.39	ADL	0.024
OH2A0940	BDL	0.250	BDL	0.250	BDL	0.250	BDL	0.250	BDL	0.250	BDL	0.250	DLL	0.673	DLL	0.462

Table IV-1B: Non-CBI Distillation Feed Analysis Facility Averages Continued

ICR_ID	DL for Beryllium	Avg Beryllium, ppmw	DL for Cadmium	Avg Cadmium, ppmw	DL for Chromium	Avg Chromium, ppmw	DL for Cobalt	Avg Cobalt, ppmw	DL for Lead	Avg Lead, ppmw	DL for Manganese	Avg Manganese, ppmw	DL for Nickel	Avg Nickel, ppmw	DL for Selenium	Avg Selenium, ppmw
OK2C0960	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	ADL	3.85	DLL	0.600
OK2C0970	BDL	0.100	BDL	0.100	BDL	0.250	BDL	0.500	BDL	0.500	DLL	0.609	ADL	3.76	BDL	0.500
OK2C0980	BDL	0.100	BDL	0.100	BDL	0.250	BDL	0.500	BDL	0.500	BDL	0.250	ADL	2.62	BDL	0.500
OK2C0990	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	ADL	3.22	BDL	#DIV/0!
PA1A1020	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	ADL	2.64	BDL	0.500
PA1A1030	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	ADL	2.27	BDL	0.500
PA1B1010	BDL	0.250	BDL	0.250	ADL	4.09	BDL	1.00	BDL	1.00	DLL	2.08	DLL	3.76	BDL	0.500
PA1B1050	BDL	2.50	BDL	0.500	BDL	0.500	BDL	2.50	BDL	0.500	BDL	0.500	ADL	32.0	BDL	0.500
TN2A1060	BDL	#DIV/0!	BDL	#DIV/0!	DLL	0.268	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	ADL	1.23	BDL	#DIV/0!
TX3A1080	BDL	0.500	BDL	0.417	BDL	0.417	BDL	0.500	DLL	1.11	BDL	0.417	ADL	5.02	BDL	0.500
TX3A1120	BDL	0.489	BDL	0.489	BDL	1.95	BDL	1.95	BDL	0.489	BDL	1.95	ADL	2.19	BDL	0.489
TX3A1190	BDL	0.033	DLL	0.107	ADL	0.276	DLL	0.182	ADL	1.09	ADL	0.521	ADL	2.14	BDL	0.165
TX3A1290	BDL	#DIV/0!	DLL	0.013	DLL	0.160	DLL	0.112	BDL	#DIV/0!	DLL	0.179	ADL	2.00	DLL	0.850
TX3A1300	BDL	#DIV/0!	DLL	0.174	BDL	#DIV/0!	BDL	#DIV/0!	DLL	0.228	BDL	#DIV/0!	DLL	0.980	BDL	#DIV/0!
TX3B1110	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	DLL	1.01	BDL	0.500
TX3B1130	BDL	0.55	BDL	0.550	BDL	1.38	BDL	2.75	DLL	14.1	BDL	1.38	ADL	28.2	BDL	2.75
TX3B1150	ADL	2.50	ADL	2.50	ADL	2.50	ADL	2.50	ADL	2.50	ADL	2.50	ADL	4.20	ADL	2.50
TX3B1160	BDL	0.489	BDL	0.489	BDL	1.96	BDL	1.96	BDL	0.489	BDL	1.96	ADL	24.6	BDL	0.489
TX3B1170	BDL	0.025	BDL	0.025	BDL	0.026	BDL	0.019	BDL	0.026	BDL	0.025	ADL	1.60	BDL	0.025
TX3B1180	BDL	0.500	BDL	0.500	DLL	1.05	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500
TX3B1181	BDL	0.500	BDL	0.500	DLL	1.05	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500
TX3B1200	BDL	0.333	BDL	0.333	BDL	0.500	BDL	0.333	BDL	0.333	DLL	1.03	DLL	4.04	DLL	1.03
TX3B1210	BDL	0.025	BDL	0.025	BDL	0.025	DLL	0.063	DLL	0.063	DLL	0.053	ADL	2.12	DLL	0.060
TX3B1220	BDL	0.243	BDL	0.243	BDL	0.483	BDL	2.43	BDL	0.483	BDL	0.725	DLL	4.08	BDL	0.483

Table IV-1B: Non-CBI Distillation Feed Analysis Facility Averages Continued

ICR_ID	DL for Beryllium	Avg Beryllium, ppmw	DL for Cadmium	Avg Cadmium, ppmw	DL for Chromium	Avg Chromium, ppmw	DL for Cobalt	Avg Cobalt, ppmw	DL for Lead	Avg Lead, ppmw	DL for Manganese	Avg Manganese, ppmw	DL for Nickel	Avg Nickel, ppmw	DL for Selenium	Avg Selenium, ppmw
TX3B1250	DLL	0.052	BDL	#DIV/0!	DLL	0.023	DLL	0.007	BDL	#DIV/0!	DLL	0.006	ADL	1.40	DLL	0.011
TX3B1310	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	DLL	0.114	DLL	1.63	DLL	0.447
TX3B1320	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!
TX3B1330	BDL	0.205	BDL	0.205	BDL	0.411	BDL	2.05	BDL	0.411	BDL	0.613	DLL	4.37	BDL	0.411
UT4A1360	BDL	0.492	BDL	0.209	BDL	2.52	BDL	0.332	BDL	8.63	BDL	0.983	BDL	4.92	BDL	2.09
UT4A1370	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	ADL	3.40	BDL	#DIV/0!
UT4A1380	ADL	0.200	ADL	0.200	ADL	0.500	ADL	1.00	ADL	1.00	ADL	0.500	ADL	1.78	ADL	1.00
VI6A1530	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	ADL	21.3	BDL	#DIV/0!
WA5A1400	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500
WA5A1410	BDL	0.208	BDL	0.208	BDL	0.413	BDL	2.08	BDL	0.413	BDL	0.617	DLL	3.33	BDL	0.413
WA5A1440	BDL	0.118	BDL	0.232	BDL	0.600	BDL	0.232	BDL	0.700	BDL	0.463	ADL	6.30	BDL	2.32
WI2B1460	BDL	0.024	BDL	0.064	DLL	0.220	BDL	0.080	DLL	0.477	DLL	0.128	ADL	5.95	BDL	0.717
WV1B1450	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500	BDL	0.500
WY4A1470	BDL	0.001	DLL	0.002	ADL	0.028	ADL	0.013	ADL	0.051	ADL	0.019	ADL	2.38	ADL	0.016
WY4A1480	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!
WY4A1490	BDL	#DIV/0!	BDL	#DIV/0!	DLL	1.95	BDL	#DIV/0!	BDL	#DIV/0!	BDL	#DIV/0!	ADL	1.10	ADL	0.600
WY4A1500	BDL	0.415	BDL	0.234	BDL	1.67	BDL	0.312	BDL	7.97	BDL	0.729	BDL	3.25	DLL	2.90
WY4A1510	BDL	1.78	BDL	0.444	BDL	1.78	BDL	1.78	BDL	1.78	BDL	1.78	DLL	7.10	DLL	3.57
WY4A1520	BDL	0.333	BDL	0.333	BDL	0.333	BDL	0.333	BDL	0.333	BDL	0.333	BDL	0.333	BDL	0.333

V. Aggregated Non-CBI and CBI Distillation Feed Analysis (Tab 5)

The information presented in Tab (5) includes the aggregated results of both the CBI and non-CBI datasets that were submitted to the EPA. In accordance with our CBI procedures and protocols, these aggregated results were generated in a separate combined CBI and non-CBI version of the dataset that is unfortunately not allowed to be shared in order to respect claims of confidentiality. However, Tables V-1, V-2, and V-3 below were generated from the aggregated dataset in order to present specific sectorwide values of interest. The EPA has decided that these values are non-CBI due to the fact that (1) The values presented are either average values from the facility's triplicate sample(s) or are presented as a count within a particular range and (2) The values presented give no indication of which facility submitted the data. It should be noted that some facilities did not report certain values or simply reported 'BDL' with no numeric limit given and thus, these values were excluded for all of the analyses presented in this section.

Table V-1 below outputs the average, median, and range of low and high values from the various distillation feed components asked for in component 3. These values were generated from the aggregated facility averages (same as using the Microsoft® Excel functions of average, median, min, and max on the data in Tab (4), but doing so with the aggregated dataset) and assume each facility has an equal weight.

Table V-1: Facility-by-Facility Sector Avgs				
<i>Distillation Feed Component</i>	<i>Avg. Value</i>	<i>Median Value</i>	<i>Low</i>	<i>High</i>
Higher Heating Value (Btu/lb)	18,887	18,991	13,123	22,333
Density (lb/ft ³)	53.96	53.99	7.59	66.7
API Gravity	31.23	31.52	1.00	54.60
Avg Mercury, ppmw	0.035	0.018	0.001	0.50
Avg Sulfur, ppmw	10,390	7,825	0.19	63,130
Avg Chlorine, ppmw	107.1	38.8	0.25	3,475
Avg Antimony, ppmw	0.76	0.49	0.0005	15.8
Avg Arsenic, ppmw	0.535	0.42	0.001	2.80
Avg Beryllium, ppmw	0.323	0.14	0.0001	2.50
Avg Cadmium, ppmw	0.257	0.17	0.001	2.50
Avg Chromium, ppmw	0.596	0.31	0.007	4.09
Avg Cobalt, ppmw	0.68	0.42	0.001	3.90
Avg Lead, ppmw	0.77	0.42	0.003	14.1
Avg Manganese, ppmw	0.554	0.33	0.005	3.90
Avg Nickel, ppmw	10.7	4.20	0.123	98.6
Avg Selenium, ppmw	0.618	0.49	0.003	4.69

Since petroleum refineries can vary in size and complexity, a more accurate weighting was assigned to each facility using the actual throughputs either through the crude distillation column(s), or in rare instances through the first major process unit (e.g. fluidized catalytic cracking unit) that were submitted as part of component 1. The results of the weighted throughput averages for the sector, as well as calculated sectorwide throughputs for the year 2010 are presented in Table V-2 below. These values should not be misconstrued in any way to represent actual emissions, as they are strictly estimates of various analytes that are coming into petroleum refineries in the feed. It should also be noted that the last three values of Higher Heating Value, Density, and API Gravity are not in the same units indicated by the columns * value, but rather they are in their own respective units of BTU/lb, lb/ft³, and dimensionless, respectively. These three values are strictly weighted on facility throughputs, rather than both facility throughput and density, as was done in the case of the various feed analytes in order to obtain the correct units of ppmw and mg/bbl.

Table V-2: Weighted Actual Barrel Throughput Sector Avgs

<i>Distillation Feed Component</i>	<i>Avg Value, *ppmw</i>	<i>Avg Value, *mg/bbl</i>	<i>Sectorwide Throughput¹ (Mg/yr)</i>
Avg Mercury*	0.029	4.08	21.8
Avg Sulfur*	11,873	1,649,869	8,798,841
Avg Chlorine* ²	97.9	13,604	72,553
Avg Antimony*	0.59	82	439
Avg Arsenic*	0.429	60	319
Avg Beryllium*	0.269	37.5	200
Avg Cadmium*	0.241	33.4	178
Avg Chromium*	0.428	60	318
Avg Cobalt*	0.61	85	455
Avg Lead*	0.517	72	383
Avg Manganese*	0.468	65	347
Avg Nickel*	10.9	1,515	8,078
Avg Selenium*	0.489	68	363
Higher Heating Value (Btu/lb)	18,861	18,861	-
Density (lb/ft ³)	54.56	54.56	-
API Gravity	30.54	30.54	-

1: Assumes an annual operating capacity of 16,911,000 bbl/cd at 86.4 % utilization rate (source: EIA, 2010 Operating Year).

2: Error in chlorine content may have been introduced due to samples taken both before and after the desalter.

*: All Distillation Feed Component values with this value are in the respective units of the column unless otherwise noted (i.e. Higher Heating Value, Density, and API Gravity).

Lastly, Table V-3 was developed to determine facility counts for specific components of interest in the various petroleum refineries' feeds. These components included API Gravity, sulfur concentration, chlorine concentration, mercury concentration, lead concentration, and nickel concentration. These counts can be compared to the ranges in Table V-1 and were done in order to present a broad overview of the aggregated dataset that would otherwise be unavailable.

Table V-3: Select Feed Component Ranges and Facility Counts

API Gravity Specific Ranges					
<i>Range</i>	0-25	25-30	30-40	>40	Total
<i>Count of Facilities</i>	29	24	60	17	130

Sulfur (ppmw) Specific Ranges					
<i>Range</i>	0-1,000	1,000-7,000	7,000-20,000	>20,000	Total
<i>Count of Facilities</i>	29	33	46	22	130

Chlorine (ppmw) Specific Ranges					
<i>Range</i>	0-2.0	2.0-30.0	30.0-100	>100	Total
<i>Count of Facilities</i>	15	38	43	30	126

Mercury (ppmw) Specific Ranges					
<i>Range</i>	0-0.010	0.010-0.030	0.030-0.050	>0.050	Total
<i>Count of Facilities</i>	45	23	30	8	106

Lead (ppmw) Specific Ranges					
<i>Range</i>	0-0.020	0.020-0.100	0.100-1.00	>1.00	Total
<i>Count of Facilities</i>	12	23	59	13	107

Nickel (ppmw) Specific Ranges					
<i>Range</i>	0-1.00	1.00-5.00	5.00-20.0	>20.0	Total
<i>Count of Facilities</i>	21	50	34	22	127